

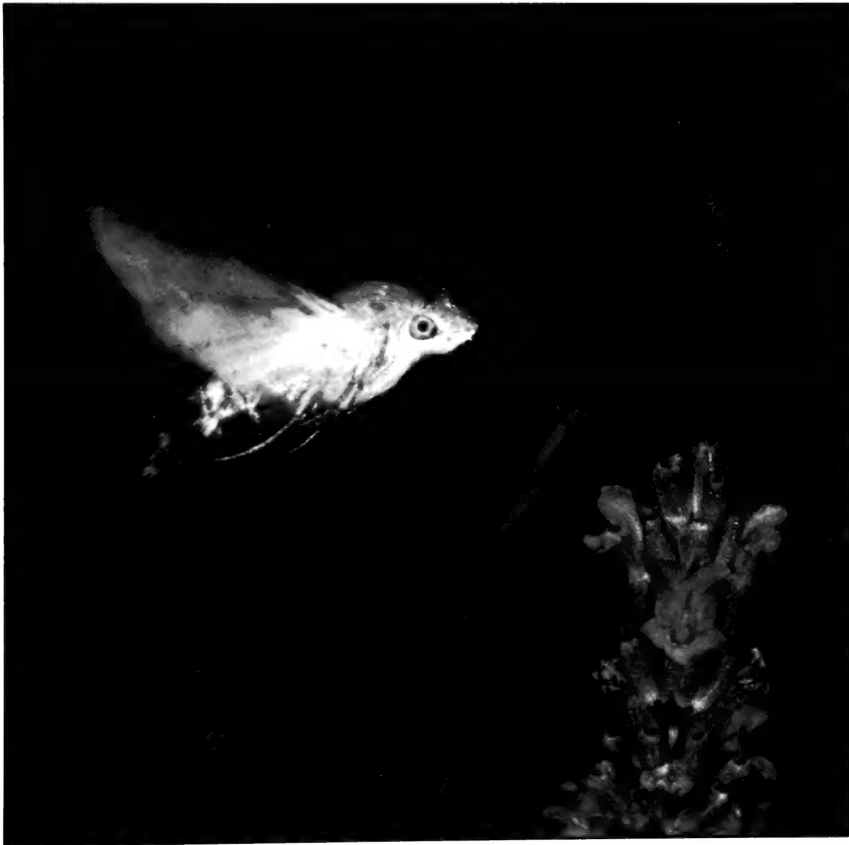
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Invertebrate Conservation News



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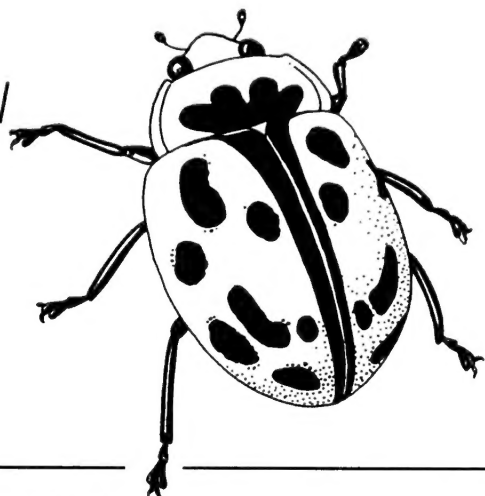
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INVERTEBRATE CONSERVATION NEWS



No. 71, June 2013

EDITORIAL

The editorial of *ICN* 47 (June 2005) considered some of the pros and cons of designating sites for their nature conservation value. The theme was taken up again in *ICN* 65 (June 2011), by which time there was increasing cause for concern about the UK government's policy of treating so-called brownfield sites as having value only for development.

There are many sites in the UK for which some form of designation has helped to prevent or control harmful developments. On the other hand, a lack of designation or a low status of designation has often been regarded as a green light for development on the assumption that the site concerned is without value for wildlife. There would probably be an outcry if human beings were treated in the same manner; either as members of a small prize-winning elite, or completely worthless.

Although designations and categorisations can be a dangerous form of over-simplification, they prove very useful in some respects. In particular, the discovery of species that occupy a high category in a Red Data List can sometimes support the case for protecting the places where they live. There are nine such categories in the Red Lists published by the International Union for the Conservation of Nature (IUCN). These include the following: Least Concern (LC), Near Threatened (NT), Vulnerable (VU), Endangered (EN), Critically Endangered (CR), Extinct in the wild (EW) and Extinct (EX). Survey data of listed species can help not only in protecting individual sites where they occur but also in developing conservation strategies, based on their distribution patterns. On the other hand, the information that is used when compiling red lists is often very limited with regard to invertebrates.



Recognising that information is lacking on many species (not only invertebrate animals) that might be of conservation concern, the IUCN has established two extra Red List categories: Data Deficient (DD) and Not Evaluated (NE). These categories are helpful in some respects but their existence could be taken to imply (inappropriately) that the listing of species in the other seven IUCN categories is supported by fully adequate information. Any such implication would clearly not be justified for a wide range of invertebrates that listed in those categories, let alone others that have not even been considered sufficiently to be listed in the “DD” or “NE” categories or that are not yet known to science.

Perhaps it would be realistic, if not always practicable, to assign an “adequacy of data” score to each red-listed species, rather than to assign certain species to a “DD” category. Would-be site developers could, however, exploit any apparent uncertainty by arguing that a red-listed species might be much more common or widespread than its categorisation implies. Even now, however, they could cite instances where conservationists have exploited the rarity of certain species in order to protect sites, only to concede later that the species concerned had been under-recorded or were becoming more widespread. Perhaps, therefore, there is a need to qualify a species-categorisation in yet another way; i.e. by assessing the impact of local extinction on the regional or wider conservation status of the species concerned. If such an assessment could be shown alongside the international or national category of a given species, it might aid the assessment of the harm that would be done by proposed projects for site development.

Perhaps decision-makers should be encouraged to take account not only of Red Data Lists but also of the related Red Data Books, which provide varying amounts of background information about the species concerned. Such information is available also in respect of some of the species that appear on the national lists of various countries. In the UK, for example, habitat-based information is available for some of the 413 invertebrates that are listed as “Priority Species” under the UK Biodiversity Action Plan. Regrettably, however, the presence of such species (except for those that have statutory protection) might have very little influence on decisions made by local planning authorities, who are constrained by a UK government policy that applies pressure in favour of economic development except at sites that already have formal protection.

In the context of statutory protection, there is currently an initiative in the UK (under the auspices of the umbrella group Invertebrate Link)



to seek legal protection for the habitats of an expanded range of invertebrate species, while not imposing unnecessary restrictions on the collection or possession of specimens. This approach is theoretically possible under current law (principally the Wildlife and Countryside Act 1981) but does not currently seem to find much favour with the UK government's advisory agency (JNCC), since it does not fit very easily with the original intentions of the legislation.

Even if a refined system of species-categorisation might aid decisions on the protection of sites where they occur, perhaps we would waste our time by advocating such a system. In all probability, governments worldwide will always find it easier to claim "green credentials" for setting aside areas as national parks or reserves (at least in theory), while allowing or participating in the destruction of habitats everywhere else in the name of economic growth. Such policies often seem to go hand-in hand with draconian anti-collecting laws, which could be seen as a means of deterring the discovery of the very biodiversity that the governments concerned are conniving to destroy.

NEWS, VIEWS AND GENERAL INFORMATION

UK State of Nature Report

"State of Nature 2013", published on 23rd May under the auspices of the Royal Society for the Protection of Birds, has been produced by a new partnership of 25 organisations involved in biological recording, research and nature conservation in the UK and its Overseas Territories. Four organisations with a particular interest in invertebrates are involved: Buglife – The Invertebrate Conservation Trust, the Bumblebee Conservation Trust, Butterfly Conservation and the Conchological Society of Great Britain and Ireland.

The report brings together many worrying statistics that show serious declines in the ranges of species in various habitat-groups, together with information about a much smaller number of species that have become more abundant or widespread. There is little information that was not already well-known to people with particular interests in natural history and conservation but the report presents information and ideas in a form that ought to serve as a wake-up call for politicians and other decision-makers, whose predecessors have played their part in approving or encouraging the harmful practices that have been largely responsible for the decline of much of our wildlife.



Those of us who are especially concerned with invertebrates will not be surprised to read that the statistics quoted in the report are based on a very limited range of records, covering only about 5% of the UK's species, which are those that have attracted the most effort; not a representative cross-section of taxa. This is especially true of the "Watchlist Indicator", which has been developed to measure how conservation priority species are faring. It is based on 155 species, many of them threatened and vulnerable. These species, which have declined by 77% in the last 40 years, do not include any plants, fungi or lichens, and no invertebrates other than butterflies and moths.

The authors acknowledge also that their sources of information on different taxa are inconsistent with respect to methods of data collection and analytical methods. Apart from differences in the methods of recording attributes such as abundance or changes in distribution, the datasets have various different start-times, ranging from the 1960s to 1977. The various recording schemes are listed in a section that describes the methods that were used in the compilation of the statistics.

Each of the species included in the statistics is assigned to one of four categories, depending on the overall change in its conservation status during the period concerned. These are as follows: strong increase, slight increase, slight decrease and strong decrease.

Overall, the headline figures show that, of 3,148 species assessed quantitatively, 60% have declined over the last 50 years and that 31% have declined strongly. A breakdown of these figures is presented in sections that cover the following habitat groups: farmland; lowland semi-natural grassland and heathland; upland; woodland (which includes wood pasture); coastal; freshwater and wetlands; urban, brownfield (which seems to overlap with urban) and marine. There is also a section on British overseas territories. Each of the sections includes information on efforts that are being undertaken to help reduce or reverse the declines. It is, however, evident that much of this work is directed to particular favoured species. Other species have, however, benefited from such schemes, as in the case of spiders, bugs and harvestmen, "which thrive on the vegetation designed for corncrakes".

For example, invertebrate statistics for farmland are based mainly on Lepidoptera and on various studies of beetles in arable fields. An index-score for twenty-five widespread butterfly species shows large fluctuations (typically of butterflies), but there is perhaps a slight upward trend from 1970 to 1990 and then perhaps a steeper downward trend. A much clearer decline in farmland birds probably



reflects a very serious reduction in invertebrates as “bird fodder”, together with altered cropping regimes, which provide relatively little seed for birds. For farmland moths, 64% of the species included have declined, as have 70% of carabid beetles studied. Only a few species have increased. The report also highlights a 76% decline of foodplants preferred by bumblebees and a reduction in dung-feeding insects and their predators, owing to the use of veterinary drugs.

Similar declines are reported in the other habitat-groups but for different reasons. In the case of lowland semi-natural grassland and heathland, the main problem has been a huge decline in the area of land managed as such: 97% in the case of semi-natural grassland (between the 1930s and 1984) and 80% in the case of lowland heathland since 1800. In the case of urban sites, one of the problems has been the paving of domestic gardens; said to amount to 5,900 ha of front gardens in London alone. The report can be downloaded from: www.rspb.org.uk/stateofnature.

Decision on restricting the use of neonicotinoids

The European Commission has adopted the proposal (see the last issue of *ICN*) to restrict the use of the neonicotinoid pesticides clothianidin, imidacloprid and thiamethoxam in European Union member-states. On 1st December 2013 the restriction will come into effect under Regulation (EU) No 485/2013) and will last for 2 years. Under EU procedures, the Commission made this decision after inconclusive voting by member-states; first in March when the proposal came before the Standing Committee on the Food Chain and Animal Health, and then on 29th April, when the Appeal Committee met. At the Appeal Committee, there were fifteen votes in favour, eight against (including the vote by the UK) and four abstentions.

As mentioned in the last issue of *ICN*, the proposal for restrictions was based on a report by the European Food Safety Authority. The report concluded that bees were probably at high risk of harm, owing to exposure to neonicotinoids, partly from dust released from treated seeds and partly from the translocation of these pesticides into pollen, nectar and guttation fluid. In the UK, a similar view was subsequently reached by the parliamentary Environmental Audit Committee (EAC), which was persuaded by the overall weight of evidence of harm. On 5th April 2013, the committee, comprised of MPs from all the main political parties, therefore recommended that the UK government should suspend the use of the above three neonicotinoids and that it



ought to vote in favour of the EU ban. The committee's report was broadly welcomed by Buglife, which has been campaigning for a ban for many years and produced a report in 2009 (Kindemba, 2009) which raised concerns about the impact of neonicotinoids on wild pollinators.

Although the UK government did not follow the recommendation of the EAC when the final vote for a European ban was taken, the ban will apply in the UK, as in other member-states. It will prohibit the use of the above three neonicotinoids (with a few exceptions) for applications to seeds, soil and foliage in crops of cereals and of plants attractive to bees. The exceptions refer only to use by professionals and include glasshouse crops or foliar application after flowering.

The ban is supported by many environmental groups and research teams in various universities, who believe that the circumstantial evidence is more than strong enough to justify exercise of the precautionary principle. But, as mentioned in the last issue of *ICN*, sceptics have some cause to argue that more research is needed in order to test reliably the hypothesis that neonicotinoids are exerting serious, sub-lethal effects on bees and other insects in the wild. In the case of honeybees, Cresswell *et al.* (2012) have employed the so-called Hill's epidemiological criteria in relation to the proposition that trace dietary neonicotinoids in nectar and pollen cause population declines in honeybees. Thus, Cresswell's group concluded that neonicotinoids could not yet be unequivocally implicated in honeybee colony collapse disorder.

In the meantime, Matt Shardlow of Buglife – The Invertebrate Conservation Trust has commented that the experimental diagnostic approach used by Cresswell *et al.* (*op. cit.*) relied on very few studies, some of which have been called into question. These include a study in Canada (Cutler and Scott-Dupree, 2007) that did not show any significant difference in the mortality of honeybee workers foraging in clothianidin-treated and control fields of oilseed rape. The lack of any such difference was partly attributable to the high level of mortality in the control hives but the authors conceded also that pollen, honey and nectar in the control hives were contaminated with clothianidin, which the bees had picked up while foraging beyond the untreated fields.

Referring to a related study by Cutler (2006), a Canadian government agency report (Anon. 2009) concluded that the problem of clothianidin contamination of control hives invalidated the conclusion that this pesticide was harmless to honeybees foraging in treated oilseed rape crops. The report also cast doubt on various technical details of the study and on its duration, which did not extend into the overwintering period.



Unfortunately, the two-year European ban is unlikely to be long enough to produce the recovery in populations of pollinators that might be anticipated if neonicotinoids have been suppressing these populations. The problem lies partly in the prolonged persistence of these chemicals, residues of which will therefore persist beyond the duration of the ban. The Commission intends, however, to review the situation whenever new information becomes available, and no later than the end of the two-year period.

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Weather hits UK insect populations

Across most of the UK, there seems to be wide agreement that populations of many insects, including butterflies and many kinds of beetle, have been noticeably low during the spring and early summer of 2013. This apparent lack of insect abundance is being attributed to an unusually cool spring.

Since weather fluctuates considerably year-to-year in the short term, the current situation is probably less worrying than climate change, as far as invertebrate conservation is concerned. The dispersal of invertebrates can, however, be hindered by many barriers that exist in an intensively managed landscape, to the extent that species of limited mobility might fail to re-establish themselves in localities where they have died out owing to short-term adverse conditions. Also, recent years have brought a run of dull and rather cool summers, which could be exerting an adverse cumulative effect on warmth-loving species. Some meteorologists think that this trend could continue for another ten years or more because of elevated temperature in the Northern Atlantic.



Records wanted for new UK and Ireland Orthoptera atlas

As mentioned in the UK's National Biodiversity Network newsletter for June 2013, the Orthoptera and Allied Insects recording scheme of Britain and Ireland is working towards a new atlas, the previous one having been published in 1997. The scheme organisers would like to receive records in order to fill gaps that are thought to exist in the existing records, partly where the distributions of certain species have changed; in some instances dramatically. The intention was originally to finalise the atlas in 2012 but the plan is now to continue collecting records during 2013 and 2014.

Records can be submitted by various means, including via various county or other local or regional recorders. For submission of records direct to the scheme, these can be e-mailed in various digital formats to orthoptera@ceh.ac.uk or, in Ireland, to info@biodiversityireland.ie. Paper records can be posted in the UK to the Biological Records Centre, Centre for Ecology & Hydrology, Wallingford, OX10 8BB or, in Ireland, to the National Biodiversity Data Centre, Beechfield House, Carriganore, WIT West Campus, County Waterford.

Further information and newsletters can be obtained online from: <http://www.orthoptera.org.uk/recording/>

SITES AND SPECIES OF INTEREST

Hunt for the New Forest Cicada

Buglife – the Invertebrate Conservation Trust is leading a hunt for the UK's only native cicada, *Cicadetta montana*. It is known as the New Forest Cicada, after the area of central southern England where it was first recorded in 1812. The last confirmed record dates back to the early 1990s but there was an unconfirmed report in the year 2000. The lack of records in recent years is of concern for the status of the UK population but the cicada is notoriously difficult to find. Its immature stages (nymphs) develop underground over several years. The adults are also elusive, since they tend to occur high in trees and have such a high-pitched song that only the most sensitive of human ears can detect it. Previous records indicate that the cicada likes sunny south-facing clearings and sings only on warm, calm days.

The survey, funded through the New Forest Higher Level Stewardship scheme, is being led by staff from Buglife with the involvement of volunteers and of research workers from Southampton



University. A PhD student there, Davide Zilli, has devised a new smartphone “app” in order to aid detection and recording of the cicada. Visitors to the New Forest are being encouraged to download this “app”, which makes a 30-second sound recording, using the smartphone’s microphone, while looking for the particular frequencies and sound patterns that characterise the cicada’s song. If the “app” detects a sequence that appears to be the song of the cicada, the phone user is prompted to upload the recording, so that it can be analysed. The survey was due to be launched at the New Forest National Park BioBlitz, on 7th and 8th June 2013.

The “app” is available for both iPhone and Android smartphones and is available on the iTunes and Google Play app stores by searching for ‘Cicada Hunt’. More information about the cicada and the “app” can be found on the project’s website – <http://www.newforestcicada.info/>

Bumblebee project at Castlemartin military range, Wales

Castlemartin Range, like many other military training areas in the UK, has been spared from the agricultural intensification that has often adversely affected biodiversity across most of the country. It contains large tracts of semi-natural coastal habitats and unimproved neutral grassland and, as mentioned in previous issues of *ICN*, it supports populations of the Shrill Carder bee *Bombus sylvarum* and other bumblebees, such as the Brown-banded Carder bee *Bombus humilis*, the Red-shanked Carder bee *Bombus ruderarius* and the Moss carder bee *Bombus muscorum*.

In the 2012 edition of the Ministry of Defence conservation magazine *Sanctuary*, Sinead Lynch of the Bumblebee Conservation Trust reported that several organisations have been involved in a project to enhance conditions for these species at the range. The project has involved the mowing and baling of the grass at different times of year along a path that runs through the range. Although the funding came to an end in August 2013, the sale of a hay crop to local farmers provides the prospect of continuing this management on a self-sustaining basis.

In a further report, Richard Brooks (Senior Environmental Adviser, DIO Environmental Advisory Service) mentioned that, in 2011, the Countryside Council for Wales designated almost the whole of Castlemartin Range (2,088 ha) as a Site of Special Scientific Interest. This additional protection was granted primarily because of the extensive area of unimproved neutral grassland; the largest in Wales. This supports 700 recorded invertebrates, 27 of which are nationally



rare or scarce. The herb-rich communities include plants such as Bird's-foot trefoil *Lotus corniculatus*, Black knapweed *Centaurea nigra*, Rough hawkbit *Leontodon hispidus* and Yellow rattle *Rhinanthus minor*.

Invertebrates allegedly at risk from shale fracking in the USA

The practice of shale fracking (using water and chemicals at high pressure to release natural gas from shale deep underground) has been extensively practised in the USA and is now being developed in other countries, including the UK, amid controversy about its environmental effects. The controversy has not included much mention of possible harm to invertebrates but there has been a report from the ADM Foundation in the USA, which mentions some rare cave-dwelling species that are considered to be at risk from fracking in the state of Texas.

The locality mentioned in the ADM Foundation's report is known as Phantom Spring and lies in a desert region near the Mexican border. The region contains oases and cave pools that are fed by waters from an aquifer, (which is thought possibly to be shared with Mexico) and there is concern that the use of large volumes of water for fracking could deplete the supply enough to affect aquatic invertebrates. There is also concern about the toxicity of pollutants that are present in the spent fracking fluid, which is deposited in disposal wells after use; these include benzene, lead, and boric acid.

The water bodies at Phantom Spring include both a seasonal lake and a cave pool, which have been seriously affected by drought in recent years, quite apart from any additional problems that might be caused by fracking. The seasonal lake is inhabited by a rare freshwater shrimp *Gammarus hyalelloides*, which is the smallest known amphipod in North America. Although nationally rare and listed as a threatened species, it is locally abundant in Phantom Lake Spring and makes up 70% of the diet of a rare fish, *Pecos gambusia*. Both the amphipod and the fish are regarded as early indicator species of pollution.

The water in the cave pool at Phantom Spring supports populations of two aquatic invertebrates, which are adapted to the sunless, low-energy habitat. Such species, known generally as stygobites, depend either on external energy sources, or on microbial communities that obtain energy from minerals. One source of external energy is provided by the penetration of plant roots through the overlying rock into the water in the cave. Just below the water surface, the roots support colonies of a rare isopod *Lirceolus cocytus*. There is some uncertainty as to whether this sightless, colourless crustacean feeds



directly on the roots or on an associated microbial film. It occurs also across the Mexican border in the Sótano de Amezcuca cave in Coahuila. The other stygobitic species known at Phantom Spring is also an isopod, *Cirolandes texensis*. Elsewhere in springs in Texas and Mexico, 100 stygobitic species have so far been recorded. These communities are being studied, with a view to creating a biogeographic map, which will provide information relevant to management of groundwater on both sides of the border. It might also help to show whether fracking is likely to harm the specialised aquatic fauna. The investigation is a joint effort between Dr. Tom Iliffe of Texas A&M University at Galveston and Dr. Fernando Alvarez of the Universidad Nacional Autónoma de México (UNAM) in Mexico City. Information can be found at: <http://www.admfoundation.org/projects/phantom/phantomcavescience.html>

Expansion of Lydd Airport, Kent, in south-east England

Buglife – The Invertebrate Conservation Trust has expressed extreme disappointment over a decision by the UK Government to approve the expansion of Lydd Airport in Kent. The airport is next to Dungeness, which is famous for its exceptional assemblage of invertebrates. Buglife believes that the expansion of the airport so close to Dungeness will be detrimental to the invertebrate communities.

Dungeness is the largest shingle foreland in Europe and, owing to its proximity to the Continent, serves as a natural entry point for natural colonisation of Britain by continental species. The invertebrates of Dungeness include endangered species such as the Medicinal leech *Hirudo medicinalis*, the Sussex Emerald moth *Thalera fimbrialis* and several others that are listed under the UK Biodiversity Action Plan, including the White Spot moth *Hadena albimacula*, the Toadflax Brocade moth *Calophasia lunula* and the Brown-banded carder bee *Bombus humilis*. The latter is one of an exceptional assemblage of bumblebees, which depend on the floristically rich shingle at Dungeness. Nationally, there have been severe declines amongst bumblebees, including *Bombus subterraneus*, which became nationally extinct but has recently been re-introduced to Dungeness, using Swedish queens (see ICN 68).

As recently as 2009, various conservation bodies, including Buglife, and Butterfly Conservation expressed concern about the proposed development of a third nuclear power station at Dungeness. As a result, the government of the day decided that the proposal for development at Dungeness should not proceed to the next stage of the decision-making process, on the grounds that the predicted damage to



the nature conservation sites could not be adequately mitigated (see ICN 59, 60 and 64). Although the planned airport expansion lies outside Dungeness proper, it could, for example, adversely affect the balance between saline and freshwater zones in the groundwater.

LITERATURE REVIEW

New species factsheets from Butterfly Conservation

Butterfly Conservation has recently published three attractively illustrated A4 factsheets, compiled by Mark Parsons, on the following moths: the Grey Carpet *Lithostege griseata*, the Forester *Adscita statice*, and the Goat moth *Cossus cossus*, all of which are listed as Priority Species under the UK Biodiversity Action Plan. Each factsheet includes a UK distribution map of the species concerned, together with information on foodplants, habitat and life cycle. In each case, the life cycle information includes a calendar-chart of the various life stages. The remainder of each leaflet deals with habitat management and with methods for survey and monitoring.

Of the three species, the Grey carpet has the most restricted UK distribution, being confined mainly to the Breckland of East Anglia,, where its larvae feed on Flixweed *Descurainia sophia*, a cruciferous plant which occurs there on roadsides and arable field margins. According to the factsheet, this moth has declined because of the establishment of conifer plantations on the Brecklands but has not fared as badly as two other Breckland moths, the Spotted Sulphur *Acontia trabealis* and the Viper's Bugloss moth *Hadena irregularis*, which both became extinct in the UK during the 20th century. At the remaining Breckland sites, rotational management, especially by rotovation, is advised in order to provide the disturbed ground that favours the foodplant. The factsheet mentions that this management will also benefit a wide range of other invertebrates, many of which are scarce or threatened. These include species that require nectar, such as the Forester, which is the subject of another of the new factsheets. Non-lepidopterous species that should benefit include the Five-banded Weevil-wasp *Cerceris quinquefasciata*, which nests in bare sand, and the very rare Breckland Robberfly *Machimus arthriticus*, which has predatory larvae that develop in sandy soil.

Compared with the Grey Carpet, the Forester has a relatively wide distribution in the UK, more so than two similar species, the Cistus Forester *Adscita geryon* and the Scarce Forester *Jordanita globulariae*.



Its larval foodplants are the Common sorrel *Rumex acetosa* and Sheep's sorrel *R. acetosella*. These are common and widespread plants but the moth is thought to have declined because of scrub invasion and urbanisation, which have impinged on the open flowery habitats that the adult stage requires. The requirements of the moth are, however, said not to be fully understood. On the basis that nectar sources are important, the main recommendation for site management is controlled grazing, including a break, in order to encourage the development of a flowery sward. Rotational disturbance of the ground (as for the Grey Carpet) is also mentioned as an option.

The subject of the remaining factsheet, Goat moth *Cossus cossus*, one of the largest British Lepidoptera, has a different kind of habitat, since its larvae feed by tunnelling their way through the wood of trees, especially poplars and willows. Despite sometimes having attained pest status, the moth has declined considerably, together with a wide range of other invertebrates, which are associated with the sap runs and burrows created by its larvae. These species include various other moths, such as the Dark Crimson Underwing *Catocala sponsa* and the Light Crimson Underwing *C. promissa* and a range of Diptera, including the hoverflies *Ferdinandea ruficornis* and *Volucella inflata* and a rare tachinid fly *Xylotachina diluta*, which is a specialised parasite of the Goat Moth.

According to the factsheet, the causes of Goat moth decline probably include agricultural intensification, the drainage of low-lying grassland and water meadows, changes in woodland practices, and the removal or neglect of pollarded trees in hedgerows. The main recommendations for conservation of the moth are based on protecting and managing the kinds of tree that provide the larval habitat, especially old pollards and a succession of younger specimens.

The above factsheets are published by Butterfly Conservation, Manor Yard, East Lulworth, Wareham, Dorset BH20 5QPL and are available online via: www.butterfly-conservation.org/

Ed: The protection of "Goat moth trees" requires the co-operation of both landowners and arboricultural and forestry contractors. A voluntary scheme has therefore been proposed in preference to statutory protection which is another possibility.

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